

REMARKS

By this Amendment, claims 4, 16, and 20 have been amended. Support for the amended claims can be found throughout the specification and figures, for example, in paragraph [0020]. Claims 1-6, 13-18, and 20 remain pending in the application with claims 7-12 and 9 being withdrawn. Applicants respectfully submit that no new matter has been added.

In the Office Action (OA) dated October 3, 2008, the Examiner rejected claims 4, 16, and 20 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctively claim the subject matter regarded as Applicants' invention; and rejected claims 1-6, 13-18, and 20 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,189,482 to Zhao et al. ("Zhao"). Applicants respectively traverse the rejections.

Examiner Interview Summary

Applicants' representatives thank Examiners Smith and Kornakov for the courtesies extended during the examiner interview conducted on December 17, 2008. During the interview, Examiners Smith and Kornakov indicated that the listed rejection under 35 U.S.C. §112, second paragraph may be overcome by more clearly defining the claimed mathematical relation. Applicants hereby amend claims 4, 16, and 20 to reflect as such.

Rejection Under 35 U.S.C. §112

The Examiner rejected claims 4, 16 and 20 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as Applicants' invention. In particular, the Examiner alleges that the specification does not explicitly identify the claimed mathematical relation. In response, Applicants hereby amend claims 4, 16, and 20 to more particularly point out and distinctly claim the calculating of the volume of the cleaning gas. Accordingly, Applicants respectfully submit that this rejection has been overcome.

Rejection Under 35 U.S.C. § 103(a)

The Examiner rejected claims 1-6, 13-18, and 20 under 35 U.S.C. §103(a) as being unpatentable over Zhao. Applicant respectfully traverses the rejection.

For a proper rejection under section 103(a), the Examiner must clearly articulate the reasons why the claimed invention would have been obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007). Where the prior art fails to disclose each and every element of a claim, the Examiner must explain why the differences between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art. M.P.E.P. § 2141(III), p. 2100-118 (Rev. 6, Sept. 2007). This explanation must include a clear basis for concluding that it would have been obvious to one of ordinary skill in the art to bridge the gap between the prior art and claimed invention. *Id.* The rejection cannot be based merely on conclusory statements. *KSR*, 127 S.Ct. at 1741, 82 USPQ2d at 1396.

In this case, Zhao fails to teach or suggest each and every element of the claims. Moreover, it would not be obvious to modify Zhao to bridge the gap between Zhao and the claims.

Claim 1 recites a method for maintaining a reactor chamber of a chemical vapor deposition system comprising, among other things, one or more plasma clean cycles comprising calculating a volume of the cleaning gas used during the one or more plasma clean cycles, the volume of the cleaning gas indicating the volume of cleaning gas introduced into the reactor chamber; and scheduling a chamber maintenance procedure in response to the notification that the volume of the cleaning gas used during the one or more plasma clean cycles has reached a predetermined volume. Claims 13 and 20 recite similar elements.

It is the Examiner's position that Zhao does not explicitly state providing notification/scheduling a maintenance procedure once a predetermined volume of cleaning gas is used (see OA, page 5). As such, Zhao fails to teach or suggest each and every element of the claims. However, the Examiner alleges that "it would have been obvious to correlate the chamber cleaning cycles with the cleaning gas volume in order to monitor the amount of cleaning gas used for inventory purposes" (see OA, page 6). In response, Applicants submit that the Examiner does not account for a chamber maintenance procedure separate from the one or more plasma clean cycles as recited in claims 1, 13, and 20.

In particular, claims 1, 13, and 20 relate to one or more plasma clean cycles as well as a separate chamber maintenance procedure. The one or more plasma clean cycles function to remove accumulation from the reactor chamber (see paragraph

[0019] of application). Separately, the chamber maintenance procedure is scheduled after a predetermined volume is reached in the one or more plasma clean cycles for *maintaining and replacing parts* (see paragraph [0024] of application). Specifically, parts such as aluminum oxide parts of the reactor chamber may be replaced in order to reduce or eliminate particles that may result in wafer defects (see paragraph [0029] of application).

In contrast, Zhao merely relates to various chamber cleaning cycles. Specifically, Zhao discloses a plasma purge process to loosen large particles in the chamber and a dry clean process that is performed on a chamber after a certain number of wafer deposition processes (see column 37, line 44 through column 38, line 6). Zhao further discloses a chamber manager subroutine that schedules various subroutines, including a process gas control subroutine (see column 16, lines 30-60). The process gas control subroutine can control the flow rates *during the chamber cleaning cycles* by reading the necessary mass flow controllers, comparing the readings to the desired flow rates, and adjusting the flow rates of the gas supply lines as necessary (see column 16, line 65 through column 17, line 3). Nowhere does Zhao disclose, teach, or suggest a chamber maintenance procedure as recited in claims 1, 13, and 20. As such, it would *not* be obvious to modify Zhao to bridge the gap between Zhao and the claims.

Accordingly, the rejection of claims 1, 13, and 20 under section 103(a) is improper and should be withdrawn. Claims 2-6 and 14-18 depend from either claim 1 or claim 13. Accordingly, the rejection of these claims should be withdrawn for at least the reasons mentioned above.

Conclusion

In view of the foregoing amendment and remarks, Applicants submit that this claimed invention is not rendered obvious by the prior art references applied against this application. Applicants therefore request the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 20-0668.

Respectfully submitted,

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